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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/027,628	12/21/2001	Daniel T. Colbert	11321-P011C1D9	1862

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EXAMINER	
LISH, PETER J	

ART UNIT	PAPER NUMBER
1754	

DATE MAILED: 03/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/027,628	COLBERT ET AL.	
	Examiner	Art Unit	
	Peter J Lish	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 May 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *84-103* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *84-103* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/29/02, 12/16/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 84, 86-87, 89-90, 93-94, 97, 99, 100, and 103 are rejected under 35 U.S.C. 102(b) as being anticipated by Nordine (US 5,336,360).

Nordine teaches an apparatus for the chemical vapor deposition growth of continuous fibers. The apparatus utilizes a laser, which is focused on the catalyst-containing end of the growing fiber. Gaseous reactants are fed into an entrance cavity and flow into the central reaction cavity, whereby they contact the growing end of the fiber. The fiber is continuously withdrawn from the growth chamber during growth. The catalyst is supplied fiber tip by adding gaseous molecules that contain the catalyst atoms to the feed gases. The apparatus further contains a means for temperature control at the fiber tip. The apparatus comprises a growth chamber, a means for heating the growing end of the fiber to a controlled temperature, a means for introducing carbon-containing feedstock gas to the growing end of the fiber, and a means for continuously withdrawing a portion of the fiber from the growth chamber. No difference is seen between the apparatus of Nordine and that of the instantly claimed invention.

Claims 84, 88-89, 93-94, and 98-99, and 103 are rejected under 35 U.S.C. 102(b) as being anticipated by Komatsu et al. (JP 61-119715).

Komatsu et al. teaches an apparatus for the production of a carbon fiber by a vapor-phase process. A hydrocarbon is introduced along with a carrier gas and reacted with a metal catalyst at a specific temperature to effect the formation of the carbon fiber. The produced fiber is grown by treatment at a specific temperature using an inert gas or a mixture of an inert gas and an active gas. The apparatus comprises a growth chamber, a means for heating the growing end of the fiber to a controlled temperature, a means for introducing carbon-containing feedstock gas to the growing end of the fiber, and a means for continuously withdrawing a portion of the fiber from the growth chamber. It is seen from figure 1 that rollers are used for continuously withdrawing the carbon fiber. No difference is seen between the apparatus of Komatsu et al. and that of the instantly claimed invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 85 and 95-96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nordine (US 5,336,360).

Nordine is applied above. Nordine does not explicitly teach a means of evaporating a metal catalyst material to form a vapor. Nordine does, however, teach that the catalyst is supplied fiber tip by adding gaseous molecules that contain the catalyst atoms to the feed gases.

Therefore, it would have been obvious to one of ordinary skill at the time of invention to include a means of evaporating the catalyst metal to provide the gaseous molecules required to supply the catalyst to the fiber tip.

Claim 91 and 101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nordine as applied to claims 84 and 94 above, and further in view of Knippenberg et al. (US 4,013,503).

Nordine does not explicitly teach the use of an optical pyrometer for monitoring the temperature of the fiber tip. Knippenberg et al. teaches a process for the growth of silicon carbide fibers using a VLS process, similar to that taught by Nordine. Knippenberg et al. also teaches the use of an optical pyrometer for monitoring the temperature of the growing fibers. It would have been obvious to one of ordinary skill at the time of invention to use an optical pyrometer to monitor the temperature of the fiber tips, as taught by Knippenberg et al., in order to ensure that efficient reaction conditions are maintained.

Claims 92 and 102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nordine as applied to claims 84 and 94 above, and further in view of Porter et al. (US 4,435,376).

Nordine does not explicitly teach a means for the recycle of the feedstock gases. Porter et al. teaches a process for the growth of carbon fibers using hydrocarbon feedstock mixed with inert gas, similar to that taught by Nordine. Porter additionally teaches the economic benefits of recycling the feedstock. It would have been obvious to one of ordinary skill at the time of

invention to supply a means for the recycle of the feedstock gases, as taught by Porter et al., in the apparatus of Nordine in order to achieve the economic benefits of such a process.

Claims 92 and 102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komatsu et al. as applied to claims 84 and 94 above, and further in view of Porter et al. (US 4,435,376).

Komatsu et al. does not explicitly teach a means for the recycle of the feedstock gases. Porter et al. teaches a process for the growth of carbon fibers using hydrocarbon feedstock mixed with inert gas, similar to that taught by Komatsu et al. Porter additionally teaches the economic benefits of recycling the feedstock. It would have been obvious to one of ordinary skill at the time of invention to supply a means for the recycle of the feedstock gases, as taught by Porter et al., in the apparatus of Komatsu et al. in order to achieve the economic benefits of such a process.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Lish whose telephone number is 571-272-1354. The examiner can normally be reached on 9:00-6:00 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PL

STUART L. HENDRICKSON
PRIMARY EXAMINER